

Application Serial No. 10/583,880
Reply to Office Action of May 24, 2011

PATENT
Docket: CU-4890

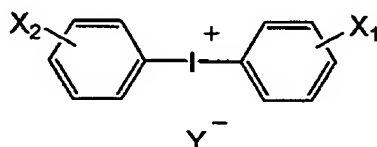
REMARKS

In the Office Action, dated May 24, 2011, the Examiner states that Claims 57-74 are pending and rejected. By the present Amendment, Applicant amends the claims.

Rejections under 35 U.S.C. §103(a)

Claims 63 and 65-68 stand rejected under 35 U.S.C. §103(a) as being obvious over U.S. Patent No. 4,942,102 (Keys), U.S. Patent No. 5,096,790 (Monroe), U.S. Publication No. 2002/0118409 (Stevenson), U.S. Patent No. 3,658,526 (Haugh) and U.S. Patent No. 3,652,275 (Baum). Claims 63-68 stand rejected under 35 U.S.C. §103(a) as being obvious over Keys, in view of Monroe, Stevenson, Haugh, Baum and further in view of U.S. Patent No. 5,892,598 (Asakawa). Claims 57-62 stand rejected under 35 U.S.C. §103(a) as being obvious over U.S. Patent No. 5,453,340 (Kawabata) in view of JP 01-287105 (Harada), Stevenson and Haugh. Claims 69-74 stand rejected under 35 U.S.C. §103(a) as being obvious over U.S. Patent No. 5,965,324 (Okubo) in view of DE 100571141 (Ernst), JP 06-175554 (Yamaguchi), Stevenson, and Haugh. Applicant respectfully disagrees with and traverses these rejections.

At the outset, Applicant notes that independent Claim 63 is currently amended to specify that the photopolymerization initiator is a compound containing diaryliodonium skeleton represented by the following general formula (2):
General formula (2):



wherein, each of "X₁" and "X₂" is independently an alkyl group having 1 to 20 carbons, halogen or an alkoxyl group having 1 to 20 carbons; and "Y⁻" is a monovalent anion. Support for the foregoing amendments can be found in previous Claim 64.

Moreover, independent Claims 57, 63 and 69 are also amended to specify that the photosensitive composition includes a binder resin and support for these amendments can be found in previously presented Claims 59, 65 and 71, respectively.

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As such, no new matter is presented.

Independent Claim 63 is rejected as obvious and the primary reference used in this connection is Keys. Applicant notes that the Office Action is attempting to combine the teachings of Haugh with Keys to arrive at the present invention. However, Applicant respectfully asserts that these references are not combinable. Firstly, Keys explicitly criticizes Haugh and teaches away from it (see column 3, lines 35-53). Moreover, due to the fact that Keys explicitly criticizes the teachings of Haugh, Applicant respectfully asserts that one of ordinary skill in the art would have no motivation or expectation of success in combining the teachings of Haugh with Keys.

For example, Keys explains that Haugh discloses substantially solid photopolymer films. Keys notes that despite the many advantages of the materials proposed by Haugh, they offer only limited viewing response to visible radiation and application has been limited to transmission holograms where the holographic image is viewed by diffraction patterns created in light transmitted through the imaged material. Moreover, Keys explains that the materials disclosed in Haugh have little or no reflection efficiency when the material is imaged to form a reflection hologram. Thus, in view of the foregoing, Applicant respectfully asserts that one of ordinary skill in the art would have no motivation or expectation of success in combining any of the teachings of Haugh with Keys. Applicant considers that Keys explicitly teaches away from Haugh and even criticizes the teachings of Haugh.

Next, the Office Action is attempting to combine Asakawa with Keys. Applicant respectfully asserts that such a combination is not possible in view of the teachings of Keys. Keys states that its invention includes a composition consisting essentially of: a binder, a monomer, a plasticizer and a photoinitiator system (see column 3, line 68 – column 4, line 15). Thus, Keys's composition must include the foregoing components. Another embodiment of Keys (see column 4, lines 30-44) includes a binder, a monomer and a photoinitiator system. Keys notes that its photoinitiator system can include various photoinitiator compounds (see column 8, lines 33-61). However, Applicant respectfully asserts that none of the photoinitiators contemplated by Keys are diaryliodonium compounds. Since Keys teaches that the photoinitiator is required ("consisting essentially of") and gives a listing of compounds contemplated by the heading "photoinitiator," Applicant respectfully asserts that a

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photoinitiator that is not found in the listing recited in Keys would not be combinable with the invention disclosed in Keys. One of ordinary skill in the art would expect the photoinitiator system of Keys to be destroyed if a photoinitiator that is not contemplated by Keys was used therewith.

Even further, the invention disclosed by Keys requires a binder. However, a binder is not required in any of the independent claims of the present application. Applicant respectfully asserts that since Keys teaches that a binder is required (i.e. the composition consists essentially of...a binder), it cannot be considered obvious to remove the binder feature of Keys to arrive at any of the inventions recited in the independent claims of the present application.

In view of any one of the foregoing reasons alone, or all of the reasons in combination, Applicant respectfully asserts that independent Claim 63 cannot be considered obvious over the cited prior art. Since independent Claim 63 is allowable over the prior art, Applicant asserts that all claims depending therefrom are allowable for at least the same reasons, as well as for the features that they recite.

With respect to independent Claim 57, Applicant notes that this claim has been amended to recite a method for producing a volume hologram, comprising the step of preparing a photosensitive composition for volume hologram recording consisting of a photopolymerizable compound as a refractive index modulation component, a photopolymerization initiator and a sensitizing dye which increases the sensitivity of the photopolymerization initiator with respect to a wavelength in the visible region.

Applicant notes that this claim was rejected as obvious and the primary reference relied upon by the Office Action was Kawabata. Kawabata discloses a photosensitive composition for volume hologram recording. The composition includes (a) a cationic polymerizable compound which is liquid at ambient temperature; (b) a radical polymerizable compound; (c) a radical photopolymerization initiator composition sensitized by a laser beam or a light having excellent coherence which has a specific wavelength to polymerize the ingredient (b); and (d) a cationic photopolymerization initiator composition which shows low photosensitivity to light having a specific wavelength and is sensitized by a light having another wavelength to polymerize the ingredient (c), wherein an average refractive index of the ingredient (a) is smaller than that of the ingredient (b).

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The Office Action notes that "dye 4" disclosed in Kawabata includes a cationically polymerizable compound, a free radically polymerizable monomer, a diphenyliodonium salt, a binder, etc.

However, Applicant respectfully asserts that the photosensitive composition disclosed in Kawabata (including dye 4) requires components that are explicitly excluded by independent Claim 57. As an example, dye 4 relied upon by the Office Action requires a binder and a binder has been explicitly excluded from Claim 57. In view of the foregoing, Applicant respectfully asserts that Claim 57 cannot be considered obvious over Kawabata alone, or in combination with any of the other cited prior art references.

Moreover, Applicant indicates that Kawabata is not combinable with Haugh. Kawabata explicitly teaches away from the teachings of Haugh and explains that the techniques disclosed in Haugh are "inferior" (see column 1, lines 45-55). As such, Applicant respectfully asserts that one of ordinary skill in the art would have no motivation or expectation of success in combining the teachings of Haugh with Kawabata.

Since independent Claim 57 is allowable over the prior art, Applicant asserts that all claims depending therefrom are allowable for at least the same reasons, as well as for the features that they recite.

Similarly, Applicant notes that independent Claim 69 is currently amended to recite a method for producing a volume hologram, comprising the step of preparing a photosensitive composition for volume hologram recording consisting of a photopolymerizable compound as a refractive index modulation component, a photopolymerization initiator and a sensitizing dye which increases the sensitivity of the photopolymerization initiator with respect to a wavelength in the visible region.

Applicant notes that this claim was rejected as obvious and the primary reference relied upon by the Office Action was Okubo. To address compound (5) recited in Claim 69, the Office Action combined Okubo with Ernst. However, Applicant respectfully asserts that Okubo requires many components that are explicitly excluded from Claim 69. For example, the Office Action relies upon Example 21 in Okubo. Applicant notes that this example includes a light sensitive layer that requires all of the components recited in column 20, lines 4-23. However, Applicant notes that many of these components are explicitly excluded from Claim